

## **UNIVERSAL SPILL PROOF CAP**

### **TECHNICAL FIELD OF THE INVENTION**

This invention relates generally to closures, and more particularly to a dispensing valve closure for universal use.

### **BACKGROUND OF THE INVENTION**

A number of packages exist for containing materials that flow (generally referred to herein as "fluids"), such as beverages. These packages are filled with the fluids through openings, such as that provided at the finish area of bottles. These openings are then sealed for distribution of the packages. The sealing is generally done with a closure, of which there are a large number of different types.

In the beverage industry, closures used for many packages, including bottles, are generally of the screw-on type, and may be repeatedly removed and resealed. Recently, however, an increasing number of beverage closures include dispensing valves that allow the beverages to flow through the closure for consumption, without removal of the closure. The most widely used dispensing closure is the pull-push dispensing closure, similar to that used on many liquid dish-washing soap packages. The pull-push closure, however, has significant drawbacks. For example, it requires the user to manually pull the spout open and closed. Also, if the user does not close the spout, the package will leak, since the spout has no valve to automatically reseal.

Therefore, a need has arisen for a dispensing valve closure that is self-sealing (also referred to as self-closing), and that is suitable for use universally in the beverage industry.

### **SUMMARY OF THE INVENTION**

Accordingly, there is disclosed a sealing and dispensing closure for an outlet opening of a container containing a consumable beverage, and comprising a) a closure body adapted to be assembled to the outlet opening of the container, said closure body including a tubular spout of substantial height and which is adapted to communicate with the outlet opening of the container and through which the liquid contained in the container is adapted to be dispensed, b) a self sealing dispensing valve which includes a marginal annular flange, and which is movable by pressure within the container between a closed position and an open position: and c) means mounting said self sealing dispensing valve below said spout and including an inwardly facing annular surface below said spout, with said marginal annular flange of said valve overlying said annular surface, an annular shoulder below said spout, and an annular retaining ring supported by said annular shoulder below said spout and engaging the side of the marginal annular flange opposite the annular surface. There is also disclosed a closure as defined in claim 1, wherein the closure body further includes an internally threaded sleeve which is adapted to be threadedly joined to the outlet opening of the container and which has a predetermined axial height, and wherein said spout has a height which at least equals about one half the predetermined axial height of the sleeve. There is also disclosed a closure wherein the diameter of the spout is substantially less than the diameter of the threaded sleeve, and wherein the spout is coaxially joined to the threaded sleeve by means of a generally flat annular flange. There is also disclosed a closure further comprising a flexible liner positioned within the threaded sleeve of the closure body for sealably engaging the outlet opening of the container when the closure is threadedly

assembled thereon. There is also disclosed a container for containing and dispensing a consumable beverage and comprising: a) a container having a flexible body portion and an externally threaded outlet opening, b) a sealing and dispensing closure joined to the outlet opening of the container and comprising (i) a closure body which includes a tubular spout of substantial height and which communicates with the outlet opening of the container and through which the liquid contained in the container is adapted to be dispensed, said spout having an internal bore which includes an inwardly facing annular surface and an annular shoulder spaced below said annular surface, (ii) a self sealing dispensing valve mounted below said spout and being movable by either external or internal pressure on the container between a closed position and an open position, said self-sealing dispensing valve including a marginal flange overlying said annular surface, and (iii) an annular retaining ring supported by said annular shoulder and engaging the side of the marginal flange opposite the annular surface. There is also disclosed a package wherein said outlet opening of said container is externally threaded, and wherein said closure body includes an internally threaded sleeve which is threadedly joined to the outlet opening of the container. There is also disclosed a closure wherein the threaded sleeve of the closure body has a predetermined axial height, and wherein said spout has a height which at least equals about one half the predetermined axial height of the sleeve. There is also disclosed a closure wherein the diameter of the spout is substantially less than the diameter of the threaded sleeve, and wherein the spout is coaxially joined to the threaded sleeve by means of a generally flat annular flange. There is also disclosed a closure wherein the self sealing dispensing valve is

configured so as to assume a generally downwardly concave configuration which is wholly below the spout. There is also disclosed a sealing and dispensing closure for an outlet opening of a flexible container containing a consumable beverage, and comprising a closure body including an internally threaded sleeve which is adapted to be threadedly joined to the outlet opening of the container and which has a predetermined axial height, and a tubular spout extending axially outwardly from the threaded sleeve a substantial distance and which is adapted to communicate with the outlet opening of the container and through which the liquid contained in the container is adapted to be dispensed, a self sealing dispensing valve mounted below said spout, and which is movable by pressure between a closed position and an open position. There is also disclosed a closure, wherein said spout has an axial height which is at least about one half the predetermined axial height of the sleeve. There is also disclosed a closure wherein the diameter of the spout is substantially less than the diameter of the threaded sleeve, and wherein the spout is coaxially joined to the threaded sleeve by means of a generally flat annular flange. There is also disclosed a closure, wherein the self sealing dispensing valve is configured so as to assume a generally downwardly concave configuration which is wholly below the spout. There is also disclosed a closure wherein said spout extends axially outwardly from the threaded sleeve a distance which is at least about one half the predetermined axial height of the threaded sleeve.

In another aspect of the invention there is disclosed a flexible liner positioned within the threaded sleeve of the closure body for sealably engaging the outlet opening of the container when the closure is threadedly assembled thereon.

There is also disclosed a universal spill proof cap sold as an after market product with packaging. It will be appreciated that packaging encompasses blister packaging, shrink wrap, clam shell, poly bagging and the like.

Plastic bottles didn't come out until recently. They existed on only a few beverages. Surprisingly valve in spout makes for an uncomfortable drinking design. Valve below spout allows spout to be a more contoured comfortable shape for drinking. Also, a bigger valve can be used below spout so the flow rate of fluid is faster not a struggle to get out.

In accordance with the teachings of the present invention, a self-sealing dispensing valve closure is provided which substantially reduces or eliminates disadvantages and problems associated with prior art dispensing valves.

In particular, a sealing and dispensing device for a package that contains a fluid is provided. A closure is provided which is shaped to engage with the package. A self-sealing dispensing valve is disposed within the closure.

This device is particularly suited to the food and beverage industry, and in particular for fluids or drinks. It should be understood that this illustration is exemplary only, and the present invention may be used with a wide range of foods, beverages, and other fluids, including teas, juices, fruit drinks, water, and flavored water, among many other fluids.

#### **DETAILED DESCRIPTION OF THE INVENTION**

Self-sealing dispensing valve may be any suitable self-sealing dispensing valve. A particular example of a self-sealing dispensing valve that may be used is disclosed in U.S. Pat. Nos. 5,213,236, 5,377,877, 5,339,995, 5,409,144, 5,439,134

and 5,839,614, all of which are hereby incorporated by reference in their entirety.

The self-sealing dispensing valve may be formed from a resiliently flexible material, and in particular may be formed from a silicone rubber that is substantially inert, thus avoiding deleterious reaction with the food, beverage, or other fluid to be dispensed.

The self-sealing dispensing valve allows fluid to be dispensed by increasing the external or internal pressure within the package, or, for example, through squeezing of the package or applying suction to the opening of the spout. Once the pressure is released, the valve automatically seals, thus preventing leaking.

As will be discussed in detail below, self-sealing dispensing valve is disposed below boss and held in place by retaining ring or other device, such as a cartridge.

The spout is formed with an internal bore to allow fluid to pass through the self sealing dispensing valve and to the user.

It should be understood that the particular shape of closure, closure body and the spout are exemplary only, and other structures may be used without departing from the intended scope of the present invention. The term "closure" is used herein to refer to any such structures, alone or in combination.

Structures may assist in holding the marginal flange thereby reducing the likelihood that the self-sealing dispensing valve will be dislodged upon the build up of pressure within the package.

It should be understood that the self-sealing valve may be held in place with any suitable device, such as a cartridge or other retaining device. Guides, which may assist in maintaining the axial orientation of self-sealing dispensing valve with the other components of the dispensing valve closure .

Furthermore, it should be understood that seals that are applied directly to the package, and not carried by the closure, may also be used without degrading from the intended scope herein.

Having described specific preferred embodiments of the invention, it will be appreciated that the present invention is not limited to those precise embodiments and that various changes and modifications can be effected therein by one of ordinary skill in the art without departing from the scope or spirit of the invention as defined by the appended claims.